THE ENGINEERING AND MINING JOURNAL.

VOL. XIII.—No. 26.—FOURTH SERIES.] NEW YORK, TUESDAY, JUNE 25, 1872. PRICE 10 CENTS PER COPY.

The Origin of Metalliferous Deposits.*

BY T. STERRY HUNT, F. R. S.

CONCLUDED FROM PAGE 395.

From what I have said it will be understood that great deposits of iron ore generally occur in the shape of beds, although waters holding the compounds of iron in solution have, in some cases, deposited them in fissures or openings in the rocks, thus forming true veins of ore, of which we shall speak further on. I wish now to insist upon the property which dead and decaying organic matters posses of reducing to protoxyd, and rendering soluble, the insoluble peroxyd of iron diffused through the rocks; and reciprocally the power which this peroxyd has of oxydizing and consuming these same organic matters, which are thereby finally converted into carbonic acid and water. This last action, let me say in passing, is illustrated by the destructive action of rusting iron fastenings on moist wood, and the effect of iron-stains in impairing the strength of linen fibre.

We see in the coal-formation that the vegetable matter necessary for the production of the iron-ore beds was not wanting, but the question has been asked me where are the evidences of the organic material which was required to produce the great beds of iron ore found in the ancient crystalline rocks. I answer that the organic matter was, in most cases, entirely consumed in producing these great results; and that it was the large proportion of iron diffused in the soils and waters of these early times, which not only rendered possible the accumulation of such great beds of ore, but oxydized and destroyed the organic matters which in later ages appear in coals, lignites, pyroschists and bitumens. Some of the carbon of these early times is however still preserved in the form of graphite, and it would be possible to calculate how much carbonaceous material was consumed in the formation of the great iron-ore beds of the older rocks, and to determine of how much coal or lignite they are the equivalents.

In the course of ages however, as a large proportion of the once diffused iron-oxyd has become segregated in the form of beds of ore, and thus removed from the terrestrial circulation, the conditions have grown more favorable for the preservation of the carbonaceous products of vegetable life. The crystalline, magnetic and specular oxyds, which constitute a large proportion of the ores of this metal, are almost or altogether indifferent to the action of organic matter. When, however, these ores are reduced in our furnaces, and the resulting metal is exposed to the oxydizing action of a moist atmosphere, it is again converted into iron rust, which is soluble in water holding organic matters, and may thus be made to enter once more into the terrestrial circulation.

There is another form in which iron is frequently concentrated in nature, that of sulphuret, and most frequently as the bisulphuret known as iron-pyrites. This substance is found, both in the oldest and the newest rocks, and, like the oxyd of iron, is even to-day forming in certain waters, and in beds of mud and silt, where it sometimes takes a beautifully crystalline shape. What are the conditions in which the sulphuret of iron is formed and deposited instead of the oxyd or carbonate of iron? Its production depends like these on decaying organic matters. The sulphates of lime and magnesia, which abound in sea water, and in many other natural waters, when exposed to the action of decaying plants or animals, out of contact of air, are, like peroxyd of iron, deoxydized and are thereby converted into soluble sulphids, from which, if carbonic acid be present, sulphuretted hydrogen gas is set free. Such soluble sulphids, or sulphuretted hydrogen, are the reagents constantly employed in our laboratories to convert the soluble compounds of many of the common metals, such as iron, zinc, lead, copper and silver into sulphids, which are insoluble in water and in many acids, and are thus conveniently separated from a great many other bodies. Now, when in a water holding iron-oxyd, sulphates are also present, the action of organic matter, deoxydizing the latter, readily furnishes the re-agent necessary to convert the iron into a sulphid, which in some conditions, not well understood, contains two equivalents of sulphur for one of iron, and constitutes iron-pyrites. I may here say that I have found that the unstable protosulphid, which would naturally be first formed, may under the influence of a persalt of iron lose one-half of its combined iron; and that from this reaction a stable bisulphid results. This subject of the origin of iron-pyrites is still under investigation.

The reducing action of organic matters upon soluble sulphates is well seen in the sulphuretted hydrogen which is evolved from the stagnant sea-water in the hold of a ship, and which coats silver exposed to it with a black film of sulphid of silver, and for the same reason discolors white lead paint. The presence of sulphur in the exhalations from some of the decaying matters is well known, and in all these cases a soluble compound of iron will act as a disinfectant, partly by fixing the sulphur as an insoluble sulphid. Silver coins brought from the ancient wreck of a treasure-ship in the Spanish Main were found to be deeply incrusted with sulphid of silver, formed in the ocean's depths by the process just explained, which is one that must go on wherever organic matters and sea-water are present, and atmospheric oxygen excluded.

The chemical history of iron is peculiar; since it requires reducing matters to bring it into solution, and since it may be precipitated alike by oxydation and by farther reduction, provided sulphates are present. The metals: copper, lead and silver, on the contrary, form compounds more or less soluble in water, from which they are not precipitated by oxygen, but only by reducing agents, which may separate them in some cases in a metallic state, but more frequently as sulphids. The solubility of the salts and oxyds of these metals in water is such that they are found in many mineral springs, in the waters that flow from certain mines, and in the ocean itself, waters of which have been found to contain copper, silver and lead. Why then do not these metals accumulate in the sea, as the salts of soda have done during long ages? The direct agency of organic life again comes into play, precisely as in the case of phosphorus, iodine and potash. Marine plants, which absorb these from the sea-water, take up at the same time the metals just named, traces of all of which are found in the ashes of sea-weeds. Copper moreover is met with in notable quantities in the blood of many marine molluscous animals, to which it may be as necessary as iron is to our own bodies. Indeed the blood of man and of the higher animals appears never to be without traces of copper as well as iron.

In the open ocean, the waters are constantly aerated, so that soluble sulphids are never found, and the only way in which these dissolved metals can be removed and converted into sulphids is by fixing them in organisms, either vegetable or animal. These by their decay in the mud of the bottom, or the lagoons of the shore, generate the sulphids which fix their contained metals in an insoluble form, and thus remove them from the terrestrial circulation.

It is not, however, in all cases necessary to invoke the direct action of organisms to separate from water these dissolved metals. It often happens that the waters containing them, instead of finding their way to the ocean, flow into lakes or enclosed basins, as in the case of the drainage waters of an English copper mine, which have impregnated the turf of a neigboring bog to such an extent that its ashes have been found a profitable source of copper. Under certain conditions, not yet well understood, this metal is precipitated by organic matters in the metallic state, but if sulphates are present, a sulphid is formed. Thus in the slates of Mansfield, in Germany sulphid of copper is found incrusting the remains of fishes, and in the sandstones of New Jersey we find it penetrating the stems of ancient trees. I have in my possession a portion of a small trunk taken from the mud of a spring in Ontario, in which the yet undecayed wood of the center is seen to be incrusted by hard metallic iron pyrites. In like manner the old trees of the New Jersey sandstone became incrusted with copper-sulphid which, as decay went on, in great part replaced the woody tissue. Similar deposits of sulphids of copper and of iron often took place in basins where the organic matter was present in such a condition, or in such quantity as to be entirely decomposed, and to leave no trace of its form, unlike the examples just mentioned. In this way have been formed fahl-bands, and beds of pyrites and other ores.

The fact that such deposits are associated with silver and with gold, leads to the conclusion that these metals have obeyed the same laws as iron and copper. It is known that both persalts of iron and soluble sulphids have the power of rendering gold soluble, and its subsequent deposition in the metallic state is then easily understood.

I have endeavored by a few illustrations to show you by what processes some of the more common metals are dissolved and again separated from their solution in insoluble forms. It now remains to say somewhat of the geological relations of ore deposits, which are naturally divided into two classes; the first including those which occur in beds, and have been formed contemporaneously with the enclosing earthy sediments. Such are the beds of iron ores

* An address before the Polytechnic Association of the American Institute, New York, May 24, 1872.

which often hold imbedded shells and other organic remains, and the copper-bearing strata already mentioned, in which the metal must have been deposited during the decay of the animal or plant which it incrusts or replaces. But there are other ore-deposits evidently of more recent formation than the rocky strata which enclose them, which have resulted from a process of infiltration filling up fissures with the ore, or diffusing it irregularly through the rock. It is not always easy to distinguish between the two classes of deposits. Thus a fissure may in some cases be formed and filled between two sundered beds, from which may result a vein that may be mistaken for an interposed stratum. Again, a bed may be so porous, that infiltrating waters may subsequently diffuse through it a metallic ore, or a metal, in such a manner as to leave it doubtful whether the process was contemporaneous with the deposition of the bed, or posterior to it. But I wish to speak of deposits which are evidently posterior, and occupy fissures in previously formed strata, constituting true veins. Whether produced by the great movements of the earth's crust, or by the local contraction of the rocks, and both of these causes have in different cases been in operation, such fissures sometimes extend to great lengths and depths ; their arrangement and dimensions depending very much on the texture of the rocks which have been subjected to fracture. When a bone in our bodies is broken nature goes to work to repair the fractured part, and gradually brings to it bony matter which fills up the little interval, and at length makes the severed parts one again. So when there are fractures in the earth's crust, the circulating waters deposit in the openings mineral matters, which unite the broken portions, and thus make whole again the shattered rocks. Veinstones are thus formed, and are the work of nature's conservative surgery.

Water, as we have seen, is a universal solvent and the matters which it may bring and deposit in the fissures of the earth are very curious. There is scarcely a spar or an ore to be met with in the stratified rocks that is not also found in some of these veinstones, which are often very heterogeneous in composition. In some veins we find the elements of limestone or of granite, and these often include the gems, such as amethyst, topaz, garnet, hyacinth, emerald and sapphire; while others abound in native metals, or in metallic oxyds or sulphids. The nature of the materials thus deposited depends very much on conditions of temperature and of pressure, which affect the solvent power of the liquid, and still more upon the nature of the adjacent rocks and of the waters permeating them. The chemistry of mineral veins is very complicated. Many of these fissures penetrate to a depth of thousands of feet the earth's crust, and along the channels thus opened the heated subtereanean waters ascending may receive in their course various contributions from the overlying strata. From these additions, and from the diminished solubility resulting from a decrease of pressure, deposits of different minerals are formed upon the walls, and the slow changes in composition are often represented by successive layers of unlike substances. The power of these waters to dissolve and bring from the lower strata their contained metals and spars is probabably due in great part to the alkaline carbonates and sulphids which these waters often hold in solution, but the chemical history of the deposition of the ores of iron, lead, copper, silver, tin, and gold, which are found in their veins, demands a lengthened study, and would furnish not less beautiful examples of nature's chemistry than those I have already laid before you.

The process of filling veins has been going on from the earliest ages ; we know of some which were formed before the cambrian rocks were deposited, while others are still forming, as the observations of PHILLIPS have shown us in Nevada, where hot springs rise to the surface and deposit silica with metallic ores, which incrusts the walls of the fissure. The great number of thermal waters show that the agencies which in past times gave rise to the rich mineral deposits of our western regions, are still at work there.

Let us now consider the beneficent results of the process of vein-making. The precious metals, such as silver, are so sparsely distributed, that even the beds rich in the products of decaying sea-weed, which we have supposed to be deposited from the ocean, would contain too little silver to to be profitably extracted. But in the course of ages these sediments, deeply buried, are lixiviated by permeating solutions, which dissolve the silver diffused through a vast mass of rock and subsequently deposit it in some fissure, it may be in strata far above, as a rich silver ore. This is nature's process of concentration.

We learn from the history which we have just sketched, the important conclusion that amidst all the changes of the face of the globe the economy of nature has remained the same. We are apt in explaining the appearances of the earth's crust to refer the formation of ore beds and veins to some distant and remote period when conditions very unlike the present prevailed, when great convulsions took place and mysterious forces were at work. Yet the same chemical and physical laws are now, as then, at work ; in one part dissolving the iron from the sediments and forming ore-beds, in another separating the rarer metals from the ocean's waters, while in still other regions the consolidated and formed sediments are permeated by heated waters, to which they give up their metallic matters, to be subsequently deposited in veins. These forces are always in operation, re-arranging the chaotic admixture of elements which results from the constant change and decay around us. The laws which the First Great Cause imposed upon this material universe on the first day are still irresistibly at work fashioning its present order. One great design and purpose is seen to bind in necessary harmony the operations of the mineral with those of the vegetable and animal worlds, and to make all of these contribute to that terrestrial circulation which maintains the life of our mother earth.

While the phenomena of the material world have been looked upon as chemical and physical, it has been customary to speak of those of the organic world as vital. The tendency of modern investigation is, however, to regard the processes of animal and vegetable growth as themselves purely chemical and physical. That this is to a great extent true, must be admitted, though I am not prepared to concede that we have in chemical and physical processes the whole secret of organic life. Still we are in many respects approximating the phenomena of the organic world to those of those of the mineral kingdom, and we are at the same time learning that these so far interact and depend upon each other that we begin to see a certain truth underlying the notion of those old philosophers, who extended to the mineral world the notion of a vital force, which led them to speak of the earth as a great living organism, and to look upon the various changes in its air, its waters, and its rocky-depths, as processes belonging to the life of our planet.

[Since this lecture was delivered, I have seen the results of the researches of Sonstadt on the iodine in sea-water, which appear in the *Chemical News* for April 26, May 17 and May 24. According to him this element exists in sea-water, under ordinary conditions, as iodate of calcium, to the amount of about one part of the iodate in 250,000 parts of the water. This compound, by decaying organic matter, (and by most other reducing agents,) is changed to iodid, from which, apparently by the action of carbonic acid, iodine is set free, and may be separated by agitating the water with bisulphid of carbon. The iodine thus liberated from sea-water by the action of dead organic matters, however, slowly decomposes water in presence of carbonate of calcium, and is reconverted into iodate, the oxygen of the air probably intervening to complete the oxydation, since, according to Sonstadt, iodids are readily converted into iodates under these conditions. He finds that the insolubility of the iodids of silver and of copper is so great that by the use of salts of these metals iodine may be separated from sea-water, without concentration, provided the iodate of calcium has first been reduced to iodid. By this property of iodine and its compounds to oxydize and be oxydized in turn, Sonstadt supposes them to perform the important function of consuming the products of organic decay, and so maintaining the salubrity of the ocean's waters. Their action would thus be very similar to that of the oxyds of iron, as explained in the present lecture.]

American Institute of Mining Engineers.

OFFICIAL BULLETIN.

Announcements to Members and Associates.

I. The dues for the year ending May, 1873, are now payable. All Members and Associates who have not paid their dues are requested to do so at once, by sending in postal orders, or checks, or money, ten dollars to the Secretary.

All members and Associates who pay their dues for each current year, strictly in advance, will have sent to their address, regularly and weekly, the ENGINEERING AND MINING JOURNAL, which is the organ of the Institute, and will contain the proceedings and transactions, and all important papers read before the Institute and all notices of meetings. Back numbers cannot, as a general rule, be sent.

II. It is expected that the more important papers read before the Institute, and the debates thereon, will be published in annual or occasional volumes to which those Members and Associates will be entitled who have paid their dues.

III. All authors of papers are requested to notify the Secretary in advance of the meetings, giving the subject and length of their papers. Attention is also called, in this connection, to Rules 12 and 13.

IV. The ninth rule has been amended, so that there will be hereafter three meetings a year, in February, May and October. The meeting next October will be held at Pittsburg, Pa.

MARTIN CORYELL, Secretary.

Wilkesbarre, Pa.

New Mexico.

The Elizabeth City *Railway Press* and *Telegraph* of May 11 says :

We have endeavoured to obtain particulars of the plan of the works now being erected by the Moreno Valley Gold Mining Company, on the Moreno River, but have failed because those interested and conducting the work are too busy to talk much, and also because the works are not sufficiently advanced to show for themselves, the machinery not having arrived yet. The leading idea of the plan, however, is to handle the dirt which heretofore —in river claims—was moved three times, but once, and to substitute cars moved by steam power on a tramway for the ancient wheelbarrow. As, after all, the object of mining is to produce gold at the cheapest rate, and the greatest part of the expense is the moving of the ground, that method by which the cost of moving the ground is reduced, reduces the cost of the production of gold, or increases the profit of the business. No one would think seriously for a moment that a wheelbarrow propelled by by man power could successfully compete with a car moved by steam power. The difference must be in favor of the latter and the profit will be in proportion to this difference. The plan is so arranged that the dirt will have to be moved but once ; after it is in the sluices it is done with forever. The Company intend to put up several sets of machinery along the river during the season, but will wait until the first is in operation, which may suggest some improvements. Its effect upon this mining region will be beneficial. Not only will the good ground bring better returns, but poorer ground that could not be worked under the old method will be worked with a profit and increase the number of mines, men employed, and money to be expended, in a great degree. The enterprise deserves success and support from all interested in mining.

Since the above was put in type, Mr. M. Bloomfield, agent of the above company, has received a bill of lading of the machinery from Kit Carson, and says that it will be on the ground next week. Messrs. Turner & Lynds have the contract for the wood-work and have commenced operations.

THE COAL TRADE.

NEW YORK, June 21, 1872.

Anthracite.

There are signs of a stiffening market; and it is believed that next month will witness a rise in prices. The Delaware and Lackawanna announce for next week's sale only 100 000 tons, and it is generally anticipated that this amount will be disposed of at a slight advance. It is true that the coal on hand at Elizabethport is nearly or quite 100,000 tons, (some estimates range as low as 70,000) and it might be inferred that so large an apparent surplus would keep prices down. But it must be remembered that a good deal of the coal at Elizabethport is already sold though not delivered, the Company being very liberal, with wholesale dealers in good standing, in the enforcement of contracts. The deliveries now making doubtless include some sales of several months back. The circular of the Pennsylvania Company for July makes no change, the prices to contractors being $3.70 for stove and $3.50 for all other sizes. It is probable that the continuance of the strikes among manufacturers in New York would temporarily decrease the demand for the lighter varieties of anthracite, but the Lehigh coals, which have their chief market outside of the city, will scarcely be affected.

Vessels are scarce, and freights a little higher.

The strike in the Spring Mountain and other collieries, to which we alluded last week, has some features of interest, which warrant us in giving a more detailed account of the circumstances. As we remarked in our previous note on the subject, the origin of the strike was the discharge of a workman from the Spring Mountain colliery, which the Union chose to consider an act of hostility. The miners ought to know by this time that the operators have given up the fruitless and foolish tactics of discharging men on account of their membership in the Union. Practically, all the skilled miners belong to it; and in this case, the man discharged, was not by any means a prominently active member. In fact, we do not believe that the Union acted on this hypothesis, except as a pretext. The underlying motive was a mistaken notion that the suspension would increase the price of coal and secure better wages for the workmen during the remaining part of the year. We say mistaken: because it is clear that the production of so small a district cannot affect the coal trade appreciably, in the face of the already enormously excessive supply from larger districts. Moreover, as the event showed, it was not possible to bring about a general suspension even in one district. Three or four collieries only were affected. The men at Spring Mountain might have saved themselves from this blunder, if they had adhered to their agreement, made two years ago with the Company, that six days' notice should be given before any strike. The object of this agreement was to benefit both sides, by giving time for negotiations and explanations. In the present instance, the men returned to work, under the pledge of arbitration offered by Mr. Robinson, the President of the Spring Mountain Company. But meanwhile, much mischief had been done. The Beaver Creek Company had refused to allow men from the other colliery to work in their mine; and the Beaver Creek miners struck in consequence. After the resumption at Spring Mountain, the Beaver Creek men were refused admittance to work there, in accordance with the general determination of the operators not to encourage strikes by giving employment during their continuance to miners engaged in them. This point has given, and will continue to give, much trouble; but the operators cannot yield the right to say who shall be employed in their mines. We shall recur to it presently.

The arbitration between the Union and the Spring Mountain company took place on Tuesday the 11th instant. The committee consisted of three members of the Union, three operators, and an umpire, (Dr. Longshore, Justice of the Peace at Beaver Meadow,) proposed by the former and accepted by the latter. It was found that the miners had quite a list of grievances, most of which were amicably arranged, in a spirit of fairness highly creditable to both sides. On two points, however, the committee was tied, the three operators on one side and the three miners on the other; and these were referred to the umpire. The first was the right of the Spring Mountain company to discharge the man whose dismissal had originated the contest. The umpire decided that this act was clearly within the province of the company, and not contrary to law or any agreement binding on the parties. The second point was the right of operators to refuse employment to men on strike from other collieries. The umpire decided that this was a question affecting all the coal regions, and not to be subjected to a local settlement. Mr. Robinson, for the operators, went so far as to say that he was ready to submit it to a general arbitration and abide the decision—a concession which we think only justified by the moral certainty that no general arbitration could result in destroying the clear rights of the operators in the matter, as established by law and common sense, and clearly stated in Judge Elwell's famous decision of April 1871. The first article of that decision is as follows:

"The right of an owner or lessee or operator of a colliery to the entire and exclusive control and management of his works is guaranteed to him by the law of the land, and is of such an unquestionable character that it ought not to be interfered with either directly or indirectly."

The only qualification of this declaration is in the sixth article, to the effect that the operators ought not to combine against members of the Union, as such. The fourth article expressly forbids a strike on account of the discharge or refusal to employ a particular person, and says such a case should be settled by local arbitration.

In this case, the strike was foolishly begun, before the arbitration was resorted to; and, what is yet worse, the committee of miners, after the decisions of the umpire had been rendered, called a meeting of the Union the same night, which resolved upon an immediate renewal of the strike, until the last point should be yielded by the company. They expected the whole district to join; but this hope proved vain, only one neighboring colliery being at all infected by the folly; and with quick repentance, the Spring Mountain men announced that they were ready to work again. To this Mr. ROBINSON has replied that the Company is not yet "ready." There should be some nominal security, at least, against the repetition of such hasty and reckless performances; the Miners' Union has its rights; but it is not one of them to walk in and out of a colliery without reference to the wishes or necessities of the owner. Mr. ROBINSON demands a pledge from the Union that no strike shall take place hereafter without twenty days' notice—upon the receipt of which pledge the men will be allowed to go to work again. The principal value of such a promise is that it implies a defeat of the Union. As a piece of security, it is probably worth no more than Judge Elwell's decision, or any other of the agreements which the working men make and break to suit their own whims or the designs of their leaders.

Bituminous.

There is nothing new to report this week in the bituminous trade. The receipts of foreign coals at Boston are very small; and the opinions we have expressed as to the effect of the new tariff are daily vindicated by actual experience.

Anthracite Coal Trade for 1871 and 1872.

The following table exhibits the quantity of Anthracite Coal passing over the following routes of transportation for the week ending June 15, 1872, compared with the week ending June 17, 1871.

COMPANIES.	1871. WEEK.	1871. TOTAL.	1872. WEEK.	1872. TOTAL.
Phila & Reading R.R†	161,817	1,751,989	137,509	2,413,705
Schuylkill Canal	31,098	241,583	24,313	299 223
Lehigh Valley R. R.	27,228	6:0 195	64,472	1,557 448
Lehigh & Sus. R. R.	22.885	371,916	40,440	752,101
Lehigh Canal	16.245	6?,715	25,895	215,704
Scranton North	14,224	64,243	15,303	295,826
" South	47.124	149,919	44.062	993,718
Penn. Coal Co., rail	27,470	86,249	24,887	524,065
" " " canal	355	1,067	119	1548
Del. & Hud. Canal Co.	41,111	142.469	44,075	389,962
" East	8,9.8	79,566	13,960	303,449
" West	3,251	20,799	8,326	159,719
" " South	13,1.5	63,714	8,314	162,216
Shamokin	13,891	251,465	12,747	217,785
Trevorton	....	....	....	....
Lykens Valley Coal Co.	....	33,956	..	2,580
Wyoming South	....	....	....	....
Wyoming North	....	....	....	....
P. N. Y. C. & R. R. Co.	8,736	57,494	11,722	293,215
Williamstown Co'y	...	17 847	....	...
Big Lick Col	....	50,874	....	10,591
Total	445,548	4,083,527	476,281	8,627,621
1870	....	....	445,548	4,083,527
Decrease				
Increase			30,736	4,544,096

* These figures are for the week and fiscal period commencing Nov. 30.

† Less coal transported for Co's use and Bituminous coal.

Bituminous Coal Trade, 1871 and 1872.

The following table exhibits the quantity of Bituminous Coal passing over the following routes of Transportation for the week ending June 15, 1872, compared with week ending June 17, 1871.

COMPANIES.	1871. Week.	1871. Year.	1872. Week.	1872. Year.
C. & O. Canal	15,616	267,020	18,111	230,906
B. & O. R. R.	30.601	550,331	26,581	549,528
H. & B. T. R. R.	6,642	172,614	....	131,240
*Harrisburg & D.	12,982	279,788	9,680	259,862
*L. V. R. R.	.....	37.725	449	14,830
P. & N.Y.C. & R. Co.	7,510	140,572	8,875	179,857
Cumberl'd Branch Canal	2,608	77,286	6,156	73,940
" Railroad	1,519	34 8.8	944	7,456
Total	76,878	1,559,554	70,796	1,443,619
	70,796	1,443 619		
Decrease	6,082	115,935		

Philadelphia & Reading Railroad and Branches.

COAL TONNAGE

For the Week ending Saturday, June 15, 1872.

BY RAILROAD—ANTHRACITE.

PASSING OVER MAIN LINE AND LEB. VAL. BRANCH.

	Tons.	Cwt.
From St. Clair	37,545	17
" Port Carbon	4,359	02
" Pottsville	2,973	14
" Schuylkill Haven	27,795	06
" Pine Grove	6.539	06
" Tamaqua	14,822	17
" Harrisburg	10	06
" Danphin	6,756	06
Total	100,800	14

FOR SHIPMENT BY CANAL.

Passing Frackville Scales	10,296	05
" Mill Creek "	2,526	01
" Schuylkill Valley Scales	814	07
" Mt. Carbon "	481	05
" Cressona "	8,2s1	03
" Pine Grove "		
" Tamaqua "	1,761	19
Total	24,161	00

SHIPPED WESTWARD VIA NORTHERN CENTRAL RAILROAD

Passing Locust Gap	1,551	16
" Shamokin	4,111	15
" Herndon	.....	
Total	5,663	11

SHIPPED WEST OR SOUTH FROM PINE GROVE.

Via Schuylkill & Susquehanna R. R.	1,211	11
" Lebanon & Pine Grove Branch	1,059	06
Total	2,270	17

CONSUMED ON LATERALS.

From Frackville Scales	41	15
" Mill Creek "	414	01
" Schuylkill Valley Scales	918	05
" Mt. Carbon "	616	11
" Cressona "	162	03
" Pine Grove "	441	10
" Tamaqua "	54	17
Total	2,649	02

LEHIGH AND WYOMING COAL.

Received via Allentown, E. Penn'a Br.	10	10
" " Alburtis " "	17	15
" " Oreland, G. & N. Br.	1,259	06
" " Connecting R. R.	.....	
" " Willow Street R. R.	676	13
Total	1,964	04

BITUMINOUS.

From Harrisburg	9,660	04
" Connecting R. R., G. & N. Br.	.....	
" Junction R. R.	20	00
Total	9,680	04

COAL FOR COMPANY'S USE.

Anthracite	6,767	10
Bituminous	194	15
Total	6,962	05

RECAPITULATION.

	Total for Week.	Corresp'g week last year.	Increase and Decrease.
Passing over Main Line and Leh. Val Branch	100,800 14	119,110 09	d 18,?9 15
For Shipment by Canal	24,161 00	33,401 05	d 9,240 05
Shipped Westward via Northern Central R. R.	5,663 11	4,841 13	i 821 18
Shipped West or South from Pine Grove	2,270 17	1,591 01	i 679 16
Consumed on Laterals	2,649 02	2,739 01	d 89 19
Lehigh and Wyoming Coal	1,964 04	191 ·3	i 1,771 01
Total Anthracite paying freig't	137,50? 08	161,876 12	d 24,367 04
Bituminous	9,680 04	12,981 14	i 3,301 10
Total of all kinds paying freig't	147,1 9 12	174,858 06	d 27,668 14
Coal for Company's use	6,96. 05	5,330 10	i 1,631 15
Total Tonnage for Week	154,151 17	180 188 16	d 26,036 19
Previously this year	2661860 12	1963298 00	i 693,562 ·2
Total to date	2816012 09	2148486 16	i 667,525 13

SHIPPED BY CANAL.

From Schuylkill Haven	22,642 00	31,095 13	d 8,963 13
" Port Clinton	1,671 00	2,139 00	d 468 00
Total Tonnage per Week	24,313 00	33,744 13	d 9 431 13
Previous y this year	275.010 09	218,681 07	i 56,329 02
Total to date	290,323 09	252,426 00	i 46,8.7 09

Report of Coal Transported over Lehigh Valley Railroad

Report of coal tonnage for the week ending June 15, 1872, with totals to date, compared with same time last year.

WHERE SHIPPED FROM.	WEEK. Tons.	WEEK. Cwt.	TOTAL Tons.	TOTAL Cwt.
Total Wyoming	13,121	03	280,0?9	08
" Hazleton	50,969	01	1,102,1?1	09
" Upper Lehigh	22	04	1,372	12
" Beaver Meadow	13.460	08	389,?13	16
" Mahanoy	11,3.2	13	185,0?6	02
" Mauch Chunk	54	00	1,747	09
Total	88,949	19	1,959,941	16
Same time last year	35,329	11	684,772	15
Increase	53,620	?8	1,275,169	01
Decrease				
Forwarded East from Mauch Chunk by rail	64,471	19	1,597,447	16
Same time last year	27,208	01	600,194	14
Increase	37,243	18	997,253	02
Decrease				

DISTRIBUTED AS FOLLOWS.

Forwarded East from Mauch Chunk by rail	63,778	16	1,570,674	14
To East for use L. V. R. R.	693	03	26,?73	02
Delivered at and above Mauch Chunk for use of L. V. R. R.	1,071	13	32,014	18
To P. & N. Y. R. R.	8,?.8	03	179,?56	16
To N. C. R. R., at Mount Carmel			1,322	12
To D. H. & W. R. R.	428	12	11 ?1?	17
To L. & S. R. R. at Packerton for rail	202	1?	7,?15	11
Delivered at M'h Chunk	26	00	1,050	02
Delivered on line of road above Mauch Chunk	276	00	10,396	04
To L. & S. R. R., at Penn Hav., for railroad			3,950	07
Do. for canal	8,552	01	67,?93	05
To Lehigh Canal Mauch Chunk	4,738	11	40,633	15
To Catawissa Railroad	444	10	4,149	13
Total	88,949	19	1,959,941	16

Report of Coal Transported over Central R.R. of N. J. (Lehigh and Susq. Div.)

Week ending June 15—Compared with same time last year.

WHERE SHIPPED FROM	WEEK 1872, tons ct	WEEK 187 . tons ct.	YEAR 1872 tons cwt.	YEAR 1871, ons.cwt.
Wyoming Region	37421 01	34713 01	610113 08	394488 15
Upper Lehigh Region	4283 00		88324 13	4614 06
Beaver Meadow Region				
Hazleton Region	8823 16	11 01	73040 04	1813 02
Mahanoy Region				
Treskow Region	5081 02		52827 00	1565 11
Mauch Chunk Region	9850 02	6083 04	1:2884 04	48742 02
Totals	65412 03	40787 06	1017189 07	449273 16
Increase	24624 17		567915 11	
Decrease				
DISTRIBUTION.				
Forwarded East of Mch Chunk by Rail	40440 08	28884 12	752130 19	371916 08
Forwarded East of Mch Chunk by Canal	17411 08	5485 01	132545 05	28317 02
Delivered at and above Mauch Chunk	1225 08	1290 01		
	161 09	2332 12	28871 02	25167 08
L. V. R. R. at Packer'n			7239 17	15594 07
Delivered to L. & B. R. R.at Plymouth Bridge	6143 12	2795 00	96612 04	8478 11
Totals				
Of the above there was transported on acc'nt of L. C. & N. Co.	16260 18	8873 15	259972 19	59747 05
W.-B. C. & L. Co.	24440 04	22408 01	429816 15	312633 00
Totals	40701 02	31385 16	689709 14	372380 05
Increase	9315 06		313429 09	
Decrease				

Lehigh Coal and Navigation Company,

Report of Coal transported over the Lehigh Canal and L. & S. Div. of Central Railroad of New Jersey for the week ending June 15, 1872, and for the year 1872.

		WEEK.	YEAR.
Forwarded East of M'ch Chunk by Rail		40,440 08	752,100 19
Delivered at and above	do., ...	1,225 08	28,871 01
Forwarded East of	do., by Canal	25,895 07	215,404 09
		67,561 03	996,376 10
Corresponding period last year—			
Forwarded East of M. Chunk by Rail..		28,884 12	371,916 08
Delivered at and above	do., ..	1,290 01	25,167 08
Forwarded East of	do., by Canal	16,244 15	68,215 04
		46,419 03	465,299 00
Increase on Railroad			
Decrease " "		11,491 03	383,888 05
Increase on Canal			147,189 05
Decrease " "		9,650 12	
Of the above there was transported on account of—			
Lehigh Coal Nav. Co.		22,926 15	379 959 13
Wilkesbarre Coal & Iron Co.		24,440 04	429,816 15
		47,366 19	759,776 08
Corresponding period last year—			
Lehigh Coal & Nav. Co		18,237 09	101,460 15
Wilkesbarre Coal & Iron Co.		22,406 01	312,631 00
		40,643 10	414,093 15
Increase		6,723 09	345 652 13
Decrease			

Penn. and N. Y. R. R.—Coxton, Pa.

Coal tonnage for week ending June 15, 1872.

	Week. Tons. Cwt.	Total. Tons. Cwt
Anthracite received :		
From Lehigh Valley R. R.	8,738 03	179,556 16
" Lack. & B. R. R.	1,523 06	41 766 02
" Pleasant Valley R. R.	1,402 13	48,597 07
" Sul. & Erie R. R.	58 05	28,294 11
Total	11,722 07	298,214 16
Distributed :		
To Lehigh Valley R. R.		24,199 16
To Lack. & B. R. R.		1 017 17
To S. Central R. R	2,405 08	54,504 18
To Ithaca & A. R. R.	1,839 06	55 861 02
To Erie R. W. Pockets for shipm't.	7,065 10	116,409 07
To individuals on line of road.	116 13	12,377 00
To points at & above Coxton for use of Co.	155 17	13,074 15
To points between Waverley and Elmira	136 13	21,170 01
Total	11,722 07	298,214 16
Bituminous received from BARCLAY R. R.		
Shipped north from Towanda	8,784 00	174,602 04
Shipped south from Towanda	90 16	1,163 08
Northern Central R. R.	....	91 01
Total	8,874 16	175,856 13
Distributed :		
To Erie Railway	7,796 04	155 151 15
To So. Central R. R	987 16	13,298 14
To Ithaca Valley R. R.	.....	21 15
Lehigh Valley, R. R.	60 16	902 04
To individuals on line of Railroad.	130 00	326 00
To points on line of road for use of Company		146 05
Total	8,874 16	175,856 13
Grand totals transported :		
Anthracite	11,722 07	298,214 16
Bituminous	8,874 16	175,856 13
Total	20,597 03	474,071 09

Lehigh Canal Coal Trade.

Shipped for the week ending June 14, 1872.

	Week. Tons. Cwt.	Week. Tons. Cwt.
Total from Mauch Chunk Region	6,665 17	73,966 14
" " Beaver Meadow "	4,270 07	36,816 14
" " Treackow "	2,061 07	10 786 10
" " Mahanoy "	468 04	3,705 05
" " Hazleton "	8,552 01	67,336 18
" " Upper Lehigh "	1,200 11	8,873 03
" " Wyoming "	2,677 00	13 929 05
Total	25,895 07	215,404 09
Corresponding week last year	16,244 15	68,215 04
Increase	9,650 12	147,189 05
Decrease		

Schuylkill Canal.

Report of coal transported over the Schuylkill Canal for the week ending Saturday, June 15, 1872.

	Tons. Cwt.
From Schuylkill Haven	22,642 00
" Port Clinton	1,671 10
Total for week	24,313 00
Previously this year	275,010 09
Total	299,223 09
To same time last year	241,583 00

Shamokin Coal Trade.

For week ending June 15, 1872	12,726 13
Same time last year	13,890 13
Increase	1,164 00
Decrease	
Total amount shipped to date	217,782 11
Same time last year	281,465 01
Increase	
Decrease	63,682 10

Delaware and Hudson Canal Company.

The following is a statement of Coal Transported by the Delaware and Hudson Canal Co. for the week ending June 15, 1872.

	FOR THE WEEK.	FOR THE SEASON.
By Delaware and Hudson Canal,	44,075	389.902
By Railroad, East	13 960	303,449
" " West	8 386	159 719
" " South	8,314	162,246
Total Tons	74,735	1,015,316
For the same period last year.		
	FOR THE WEEK.	FOR THE SEASON.
By Delaware and Hudson Canal,	41 111	142,469
By Railroad, East,	8,908	79,606
" " West	3 251	20,799
" " South	13 155	63,714
Total Tons	66,425	306,548
Increase	708,768	

Delaware and Hudson Canal Company.

Coal mined and forwarded by the Delaware and Hudson Canal Company for the week ending Saturday, June 15, 1872.

	WEEK.	SEASON.
North	52 148 07	1,160,871 17
South	8 314 09	162,246 06
Total 1872	60,462 16	1 323,118 03
Corresponding time in 1871 :		
North	55,005 12	183,204 14
South	13,155 09	63,714 09
Total	68,161 01	246,919 03
Increase North		
Decrease North		
In rease South		
Decrease South		
Total decrease 1872	7,698 05	
Total increase 1872		1,076,199 00

Delaware Lackawanna & Western Rail Road Company.

Coal transported on the Delaware, Lackawanna, & Western Railroad for the week ending Saturday, June 8, 1872.

	WEEK. Tons. Cwt.	YEAR. Tons. Cwt.
Shipped North	15,403 16	295 826 08
Shipped South	44,062 02	983,718 06
Total	59,465 08	1,279,544 14
For the Corresponding time last Year :		
Shipped North	14,224 06	64,210 07
Shipped South	47,123 11	149 919 05
Total	61,347 17	214,129 17
Increase		1,065,414 19
Decrease	1,882 09	

Pennsylvania Coal Company.

Shipments of Pittston Coal for the week ending June 15, 1872.

	1872. WEEK.	1872. YEAR.	1871. WEEK.	1871. YEAR.
By Railway	24,887 09	524,065 02	27,470 19	86,249 08
" Canal	119 03	1,548 06	355 09	1,066 12
Total	25,006 12	525,613 08	27,826 08	87,316 00
Increase 1872	438,297 08			

Statement of Coal Transported over Cumberland and Pennsylvania Railroad

During the week ending Saturday June 15, and during the year 1872, compared with the corresponding period of 1871.

WEEK.

	To C. & O. Canal Tons. Cwt.	To B. & O. R.R. Co. Tons. Cwt	Total. Tons Cwt.
1872	18,111 05	26 580 17	44,692 03
1871	15.616 07	30,002 12	45,618 19
Increase	2,494 18		
Decrease		3,421 15	926 17

YEAR.

1872	230,905 04	549,528 07	780,433 11
1871	267,019 11	550,330 26	817,350 07
Increase			
Decrease	36,114 07	802 09	36,916 16

Cumberland Branch R. R.

WEEK.

	To C. & O. Canal. Tons. Cwt.	To B. & O. R.R. Co Tons Cwt.	Total. Tons. Cwt.
1872	6,155 12	944 09	7,100 01
1871	2,607 11	1,518 11	4,126 02
Increase	3,548 01		2,973 19
Decrease		574 02	

YEAR.

1872	73,940 04	7,456 03	81,396 07
1871	77,268 04	34,818 06	112,086 10
Increase			
Decrease	3,328 00	27,362 03	30,690 03

Prices of Coal by the Cargo.

[CORRECTED WEEKLY.]

	AT NEW YORK, June 21. W. A.	AT PHILADELPHIA, June 21. R. A.	AT PHILADELPHIA, June 21. W. A.
SCHUYLKILL.			
Lump	$- —	- —	- —
Steamer	- —	- —	- —
Broken	- —	- —	- —
Egg	4 75	- —	- —
Stove	5 00	- —	- —
Chestnut	—	- —	- —
Pea	- —	- —	- —
LEHIGH.			
Lump, (along side)	——	- —	- —
Broken	- —	- —	- —
Egg	- —	- —	- —
Stove	- —	- —	- —
Chestnut	- —	- —	- —
Pea	- —	- —	- —
SPECIAL COALS *			
Honey Brook, Le'h W. A.	4 00@5 00	- —	- —
Spring Mountain " "	- —@- —	- —	- —
Sugar Creek " "	- —@- —	- —	- —
Sugar Loaf " "	- —@- —	- —	- —
Old Comp'y's " "	4 00@5 15	- —	- —
Room Run " "	4 00@4 50	- —	- —
McNeal " "	- —	- —	- —
Girardville " "	—	- —	- —
Hill & Harris " "	- —	3 10@4 00	- —
Shamokin " "	- —	- —	- —
Lykens Valley " "	- —	- —	- —
Broad Top " "	- —	- —	- —
McMichael " "	- —	3 25@4 25	- —
Henry Clay " "	- —	- —	- —
Powelton " "	- —	- —	- —

Company Coals.

June, 1872.

	L.	Str.	Gra.	Eg.	Sto	Chest
*Scranton at E. Port	3 65	3 75	3 75	4 20	3 75	
*Pittston at Newburg	3 50	3 50	3 50	3 50	3 70	3 50
*Lackawana at Weehawken	3 50	3 50	3 50	3 50	3 90	3 50
Wilk'b're at Hoboken	3 75	3 75	3 85	3 85	4 25	3 90
Old Co. Lehigh at PtJohn'n	5 15	—	4 35	4 35	4 60	4 10
Lehigh at Eliz. Port	5 00	—	4 25	4 25	4 50	4 00

For freights to different points see "Freights."
* To contractors only.

Prices at Baltimore—June, 1872.

Wholesale Prices to Trade.

Wilksbarre, by cargo or car load	$4 60@4 85
Pittston and Plymouth, do	4 60
Shamokin Red or White Ash, do	4 75
Lykens Valley Red Ash, do	5 50
Zerba Valley	
Troverton	
By retail, all kinds per ton of 2,240 lbs	6 50@7 50
George's Creek and Cumberland f. o. b. at Locust Point for cargoes	4 60@4 65
Fairmont and Clarksburg gas f. o. b. at L. Point	6 00
BITUMINOUS COALS.	
Kittaning Coal Co.'s Phœnix Vein, f. o. b. at Phila	$
Lemon " " "	
Cumberland Vein Coal	
Consolidation Coal Co.'s on board	N. Y.
Maryland Coal Co	"

Prices at Georgetown, D.C., and Alexandria, Va.

June. 1872.

George's Creek and Cumberland f. o. b. for shipping.... $ 4 75

Prices at Havre de Grace, Md.

June, 1872.

Wilkesbarre and other White Ash for Cargoes	$4 25@4 50
Lykens Valley	@5 50
Shamokin Red or White Ash	4 25@4 50

Bituminous Coals (Cumberland).

Georgetown, F.o.b	$4.25
Baltimore	4.50
New York	6.60

Prices of Gas Coals.

June, 1872.

PROVINCIAL.

Corrected weekly by Louis J. Belloni, Jr., 41-43 Pine st., N. Y.

	Coarse	Slack.
Block House	$1 60	$- 75
Gowrie	1 60	— 75

Vessels are being chartered at $3 00 to $3 25.

Corrected by Bird, Perkins & Job, 27 South street.

	Coarse.	Culm of Coal.
Picton	$2 25	1 25
Sydney	2 25	- 80
Lingan	1 60	- 80
Caledonia	1 60	- 80

A discount from the prices of the coarse Coal on purchase of 5000 tons and upwards. Duty on all slack coal or Culm : 40c. per ton of 28 bushels, 80 pounds to the bushel. On all bituminous coal or shale : 75 cents per ton of 28 bushel.

AMERICAN.

	Currency.
Westmoreland	$7 10 @- —
Fairmount Gas Coal Co. of N. Y.	7 00 @- —
Despard Coal Co.	7 00 @- —
Penn.	7 10 @- —
Newburg Orrel Gas	— @- —
West Fairmount Gas Coal	7 00 @- —
AT PHILADELPHIA.	
Westmoreland	6 00 @- —

Prices of Foreign Coals.

June, 1872.

Duty $1 25 per ton.

Corrected weekly by ALFRED PARMELE, No. 32 Pine street, N. Y.

Liverpool Gas Caking	$ 8 00@- —
" " Cannel	12 00@13 00
" House "	19 00@20 00
" Orrel	14 00@16 00

Per ton 2,240 lbs., ex-ship.

PRICES FROM YARD.

Liverpool House Orrel, screened	$14 00@16 00
" Cannel, "	19 00@23 00

Per ton 2,000 lbs. delivered.

Foreign and Provincial Freights.

June 1872.

Foreign.

Newcastle and Ports on Tyne, per keel of 21 1-5 tons £
Liverpool, 5 per cent primage

TO NEW YORK.

Provincial

Sydney	$3 00
Lingan	3 00
Cow Bay	3 25
Port Caledonia	3 15
Little Glace Bay	3 00

TO BOSTON.

Sydney	3 00
Lingan	3 00
Cow Bay	3 00
Port Caledonia	3 00
Little Glace Bay	2 90

Rates of Transportation to Tide Water.

BY RAILROAD.

TO PORT RICHMOND, PHILADELPHIA.

Philadelphia and Reading Railroad, from Schuylkill Haven for consumption ($1 85 less 55c drawback	$1 30
For reshipment	1 75

MAUCH CHUNK TO ELIZABETHPORT.

L. V. Railroad from Mauch Chunk to Phillipsburgh	$0 66
C. R. R., N. J., Phillipsburgh to Elizabethport	0 98
Shipping expenses at Elizabethport	25
Wharfage	10
Total	$1 99

MAUCH CHUNK TO PORT JOHNSON.

L. V. R.R., or L. & S. R.R. from M. C. to Phillipsb'g	$0 66
C. R. R., of N. J., Phillipsburgh to Pt. Johnson	0 98
Shipping expenses	25
Wharfage	10
Total	$1 99

TO HOBOKEN

L. V. R. R., Mauch Chunk to Phillipsburgh	66
Morris & Essex R. R. Phillipsburgh to Hoboken	0 98
Shipping expenses	25
Wharfage	10
Total	$1 99

TO SOUTH AMBOY.

L. V. R. R.	66
B. & D. R. R. / Cam. & Am R. R.	98
Shipping Expenses	35
Total	$ 199

PENN HAVEN TO ELIZABETHPORT.

L. V. R R. Penn Haven to Phillipsburgh	0 78
C. RR. of N. J. Phillipsburgh to Elizabethport	0 98
Shipping expenses	25
Wharfage	10
Total	$ 2 11

Freights.—June 21, 1872.

TO EASTERN PORTS.	Cumberland. From Georgetown.	Cumberland. From Baltimore.	Anthracite. From Philadel'a.	Anthracite. From Elis. Port, Port Johnson, and Hoboken.	Anthracite. From Rondout.	Anthracite. From Newburgh.
Amesbury	3 00					
Bangor	3 00	2 90				
Bath	2 75	2 80		2 20	2 45	2 25
Boston	2 30	2 40		1 60	1 25	1 15
Bridgeport				1 55	1 80	1 75
Bristol						
Conassett Nar'ows	2 75			1 25	1 25	
Derby	3 00					
Dighton	2 50			2 20		2 45
East Cambridge				1 55	1 80	1 75
Fall River	2 35	2 60				
Hackensack				1 60	1 75	
Hartford	3 00	3 00		50		
Hoboken	2 10			50		
Jersey City	2 00			1 40	1 60	
Middletown						
Mystic				1 60		
New Bedford	2 70	2 75		2 35	2 55	
Newburyport	3 00	2 90		1 00	1 25	1 15
New Haven	2 30	2 40		1 30	1 55	1 45
New London	2 40	2 60		1 55	1 80	1 75
Newport	2 35			55		60
New York	2 10	1 90		1 00		1 15
Norwalk	3 55	2 60		1 35	1 60	1 55
Norwich	2 50	2 60		1 60	1 90	
Pawtucket	2 75	2 85		2 10		
Portland	2 75	2 75		2 30	2 55	
Portsmouth, N.H	3 00	2 90		1 60	1 80	1 75
Providence	2 35	2 60				
Rockport				1 30		
Saco				2 20		
Sag Harbor				1 00		1 15
Salem	2 85	2 80		1 35		
Stamford				2 00		
Stonington				1 55		
Taunton						
Warren						
Washington						
TO RIVER PORTS.						
Albany	2 75	2 40			55	
Catskill					50	
Cocksackie					50	
Coeyman's					65	
Cold Spring	2 30	2 25			20	
Fishkill					20	
Haverstraw	2 30				40	
Hudson	2 50	2 40			40	
New York						
Nyack	2 25				45	
Poughkeepsie	2 25				30	
Rhinebeck					30	
Rondout					30	
Saugerties					40	
Sing Sing					50	
Stuyvesant					55	
Tarrytown					50	
Troy	3 00	2 40			75	
West Point					20	
Yonkers					50	

MARKET REVIEW.

IRON—The market for Scotch Pig is without animation, notwithstanding advices from the other side quoting an advance there to 12s. for Coltness, and 117s. 6d, for Glengarnock. The stock here is being gradually reduced, and holders, with an easy Money market, look with more confidence for higher prices; we quote Glengarnock $47, but when time is given $50 is asked; a forced sale of 2a300 tons was made at $46,50; we quote the range for all brands nominally $47a54. At Philadel hia, a sale of 200 tons Eglington was made at $46, cash. American is quiet but firm at $50 for No. 1 North River, and $52a55 for No 1 Lehigh, with sales of 100 tons, on private terms; No. 2 may be quoted $49a51, and Gray Forge $48 here, with little offering. Rails continue in fair inquiry at $72a74 for new English, and $47a50 for old, both gold, with sales of 1000 tons of the latter, on terms not made public. American Rails are quiet at $85a90, though some mills are asking as high as $100. Scrap is quiet and nominal at $55 from yard, and $50 from dock. Refined Bar from store continues firm, but not active at previous quotations. The English markets seems to have broken loose from all moorings, and the trade is in a chaotic state. The new scale of wages of workmen will go into effect 1st prox., which will send up prices 10s. ₱ ton, making the quotation £13,15s.a£14 for Refined Bar.

PHILADELPHIA, June 17.—(By Edward Samuel.—The market in No. 1 and 2 Foundry Lehigh grades of Pig is much excited. In Forge numbers, no sales or change from last review. Manufactured remains unchanged. We quote No. 1 Foundry Pig, at Furnace, $50a53; No. 2 $49a52; No. 3 Forge Fig, $46a47; and No. 4, White and Mottled, $43a44.

LEAD—The government is supplying the moderate demand for Pig at $6,40 gold. Importers ask 6¼ cents gold for ordinary Foreign, and 7a7¼ for Refined. Manufactured is steady at 9¼ cents for Bar, 11 for Sheet and Pipe, and 15 for Tin-lined Pipe, less 10 per cent. to the Trade.

COPPER.—Manufactured is unchanged, and we continue our quotations of 43 cents for Sheathing and 45 for Bolts and Braziers; Bronze and Yellow Metal Sheathing 30, and Y. M. Bolts 32. Ingot continues in speculative demand, and prices are ¼a½ cents per lb. higher; the transactions embrace 300,000 lb. Lake on the spot at 33¾a34¼ cents, and 5a600,000 lb. for delivery, from July to September, 34½a34¾; at the close 34¼ cents was asked for cash lots. English Copper is offered sparingly; about 50,000 lb. Best Selected sold at 33½a33 cents cash.

SPELTER—Is still neglected; foreign 7¼ cents gold, domestic 11c., currency is the nominal quotation for Silesian.

TIN—Pig remains in the same stagnant position; prices are irregular, holders generally asking 38 cents gold for English and Straits, but small lots have been sold at 36½a37; for Banca 50 is asked. The latest cable advices from England that we know of quote Straits and English £172. The demand for Plates has fallen off again and the business has been small; stocks however are held firmly; 500 boxes Charcoal Tin sold at $15, 25 for I. C., and 500 do. Coke Tin $12,25 gold.

ZINC—Sheet is nominally steady at previous quotations, but without much demand, and none from agent's hands. Belgian plates are quoted at 10c. gold, French oxide 9½ gold, American 10c. currency, Maganese black oxide 3½c.

METALS.

NEW YORK, June 20, 1872.

IRON.—Duty: Bars, 1 to 1¼ cents ₱ lb; Railroad, 70 cents ₱ 100 lbs.; Boiler and Plate, 1¼ cents ₱ lb; Sheet, Band, Hoop, and Scroll, 1¼ to 1¾ cents ₱ lb; Pig, $7 ₱ ton; Polished Sheet, 3 cts. ₱ lb; Galvanized 2½; Scrap Cast, $6; Scrap Wrought, $8 per ton.

	Store Prices.
Pig, Scotch No. 1, ₱ ton	51 00@— —
Pig, American, No. 1	51 00@52 —
Pig, American, No. 2	49 00@51 —
Pig, American, Forge	48 00@50 00
Bar Refined, English and American	— —@115 00
Bar Swedes, assorted size (	85 00@160 00
	Store Prices, Cash.
Bar, Swedes	125 00@135 00
Bar, Refined, ⅜ to 2 in. rd. & sq. 1 to 6 in. x ⅜ to 1 in.	110 00@— —
Bar, Refined, 1¼ to 6 by ¼ & 5:16 & 2½ to 2⅞ rnd. sq.	115 00@— —
Bar, Refined. 1 & 1½ by ¼ & 5:16	117 50@— —
Large Rounds	122 50@127 50
Scroll	122 50@152 50
Ovals and half-round	127 50@137 50
Band	—@122 50
Horse Shoe	120 00@130 00
Rods, ⅜ to 3-16inch	115 00@155 00
Hoop	135 00@177 50
Nail rod	8 @— —
Sheet, Russia, as to assortment (gold)	— 16 18½
Sheet, Singles, D. and T. Common	—6¾@— 7½
Sheet, D. and T. Charcoal	—7½@— 8½
Sheet, Galv'd, Nos. 10 to 27, list 10 per cent discount	—@— —
" " Nos. 28, and 29	—@— —
Rails, English (gold), ₱ ton	72 00@74 00
Rails, American, at Works in Pa	85 00@90 00

COPPER.—Duty: Pig, Bar, and Ingot, 5; old Copper 4 cents ₱ lb; Manufactured, 45 per cent. ad val.

	All Cash.
Copper, New Sheathing, ₱ lb	— @— 43
Copper Bolts	— @— 45
Copper Braziers, 16oz. and over	— @— 45
Copper Nails	— @— 45
Copper, Old Sheathing, &c. mixed lots	26 @— 28
Copper, Old, for chemical purposes, 14@16 oz	— @— —
Copper English Pig	32½@— 33
Copper, American Ingot	34 @ 34½
Yellow Metal, New Sheathing & Bronze	— @— 30
Yellow Metal Bolts	— @— 32
Yellow Metal Nails	30 @— 32

LEAD.—Duty: Pig, $2 ₱ 100 lbs.; old Lead, 11½ cents ₱ lb; Pipe and Sheet, 2¾ cents ₱ lb.

Galena, ₱ 100 lbs	$— — @— —
Spanish (gold)	— — @6 62½
German, do.	— — @6 62½
English do.	6 62½@7 12½
Bar (net)	8 75 @— —
Pipe (net)	— — @11 00
Sheet	— — @11 00

Colwell, Shaw & Willard Tin-Lined Lead Pipe 15 cts. ₱ lb.

STEEL.—Duty: Bars and ingots, valued at 7 cents ₱ lb or under, 2¼ cents; over 7 cents and not above 11, 3 cents ₱ lb; over 11 cents, 3½ cents ₱ lb, and 10 ₱ cent ad val. Store prices.

English Cast (2d and 1st quality) ₱ lb	— 16½@— 18½
English Spring (2d and 1st quality)	— 7½@— 10½
English Blister (2d and 1st quality)	— 10½@— 17½
English Machinery	— 11½@— 13½
English German (2d and 1st quality)	— 10½@— 12
American Blister "Black Diamond"	— —@— 12
American, Cast, Tool do.	— 15 @— 16
American, Spring, do.	— 9 @— 11
American Machinery do.	— 10 @— 10½
American German, do.	— —@— 11

TIN.—Duty: Pig, Bars, and Blocks, 15 ₱ cent. ad val.: Plate and Sheets and Terne Plates, 25 ₱ cent.: Roofing 25. ad val.

	Gold ₱ lb.
Banca	48 @—
Straits	36½@37
English	36½@37

PLATES.

Fair to Good Brands.	*Gold.*	*Currency.*
I. C. Charcoal, ₱ box	$13 25 @13 50	$15 00 @15 50
I. C. Coke	12 25 @12 50	14 75 @14 75
Coke Terne	10 50 @10 75	12 00 @12 50
Charcoal Terne	12 — @13 00	14 00 @15 00

SPELTER—Duty: In Pigs, Bars & Plates, $1.50 p. 100 lb

Plates, Foreign (gold) p. 100 lb.	7 00 @ 7 12½
Plates, Domestic p lb.	— 8 @— 11

ZINC—Duty: Pig or Block, $1.50 per 100 lb.; Sheet 2½c per lb

Sheet per lb.	— 10 —@ 10½

San Francisco Stock Market.

BY TELEGRAPH.

NEW YORK, June 13, 1872.

Our advices from the San Francisco Stock Board are dated the 18th inst., we have also appended the report per Associated Press, dated the 14th inst., both reports evince a decidedly firmer and more settled feeling in the market than we have known for a long time past. With the exception of a slight decline in Gould & Curry the list has advanced; the advance having been regular and uninterrupted during the daily operations of the week. The reports are as follows.

		June 14	June 18.
Savage	—	147 50	150
Crown Point	New Issue	—	138
Yellow Jacket	—	119	120
Kentuck	—	220	—
Choliar Potosi	—	109	110
Gould & Curry	—	145	150
Belcher	—	—	8oC
Imperial	New Issue	—	7
Hale & Norcross	—	—	—
Eureka C Y	—	—	16
Ophir	—	36	—
Alpha	—	—	—
Raymond & Ely	—	—	—
Amador	—	—	—

MISCELLANEOUS.

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The Copper Mines of Chili.

BY JAMES DOUGLAS, QUEBEC.*

CONCLUDED FROM PAGE 388.

Tomaya will doubtless produce less in the course of a few years; for the *desmontes*, which have for some years been yielding a considerable portion of its quotum, will hardly bear re-picking; the old workings abandoned to tributers, are, of course, not inexhaustible, and the mines have invariably and steadily grown poorer in the deeper levels. Increased cost of production going on simultaneously with diminution in the percentage of the ore, must result sooner or later in a serious falling off. The facility of extracting poor ores which the Lecaros adit may afford, may ward off the evil day for some years; but within the next decennial period the supply from this quarter must decrease, and that considerably.

Panulcillo sails so close to the wind that if copper falls it will inevitably fall; if copper stands at even 15s., there seems to be no reason why it should not live and prosper; for, although the mine has been worked improvidently, and the necessities of the company have prevented any unproductive work being done, in the course of a twelvemonth or so of good prices the evil might be rectified, and the supply of ore brought up to the old figure. No large Chili mine depends so entirely upon a slight variation in the price of copper as Panulcillo. As at the late low price it managed to hold its own, a rise of 2s. or even 1s. per unit, would make the enterprise profitable.

No doubt the Brillador could yield more than it does. Higuera, and the mines back of Peña Blanca, taken all in all, are as likely to fall off as to increase.

Carrizal, if the *Veta Principal* continues to grow poorer, has seen its best days; if, however, the new shafts now being sunk strike good ore, the *mineral* will produce more than ever. Judging from the experience of Tomaya, Carrizal, Catemo, and other mines, the Chili lodes steadily grow poorer in depth, the ore becoming more and more mixed with iron, either as sulphuret or oxide, but as the deepest mine has not reached 300 fathoms on the inclination of the lode, it is unsafe to conclude that the deterioration will be progressive. Should it be so, Chili, even with the advantage of better prices, will not again bring up her production to that of 1869.

Cerro Blanco may continue producing as much as at present for some years to come. The Copiapó, suffering as it does from the increase in wages and the emigration of its population to the new silver *mineral* of Caracoles, will probably decline; but Chañaral, now that it has a railroad, may be expected to increase its yield. Bolivia is rapidly falling off in her production.

There is very little chance of any new mines of consequence being opened. A copper lode in a desert country cannot escape detection, more especially in Chili, where all the inhabitants are directly or indirectly interested in mines, and where professional mine hunters are constantly searching even the most arid and elevated regions for mineral. All the great lodes now worked, except, perhaps, those of the Salado and others in the Atacama desert, have been known and worked from time immemorial. There is, therefore, no probability of an increase in the production of Chili, but every probability of a steady decline. But that decline will not be sudden nor speedy. All the large mines have ore enough in sight, or reserves, to keep up the supply to nearly its present proportions for years to come. The great vacillations in the quantities shipped from month to month do not indicate a like vacillation in the production, which the railroad returns of ore or regulus carried to the coast from the different mines show to be comparatively constant. Mine owners and smelters are able in Chili as well as in England to hold large stocks in anticipation of a favorable turn in the market. Larger shipments than usual may be looked forward to as a result of the present favorable price, — since some large stocks are held, especially in the north. But advanced prices are not likely to increase the production to any great extent; for even if they rose sufficiently to justify ore being broken which has heretofore been left standing on account of its poverty, miners to do the work could not be found.

It is pretended that the new railroads penetrating the Cordillera, in Peru, will bring to market vast quantities of ore heretofore shut out by heavy freights; but it remains to be ascertained whether Corderillera copper mining in Peru will reverse the universal ill success which has attended it in Chili.

COPPER SMELTING IN CHILI.

As is well known, the condition in which the copper comes to England is not that of ore. Twenty-five years ago very little copper was smelted in Chili; whereas, in 1870, only 3·16 per cent. was exported as ore, while 55·35 per cent. was exported as bars and ingots, and 41·48 per cent. as regulus. The previous review of the mines has shown how little ore of high produce is or can be obtained. It is therefore imperatively necessary to smelt it as near the mine as possible. But the high price of fuel—the average cost of Chili coal delivered at any of the northern ports being 8 dollars per ton—renders smelting so expensive that only by the exercise of the greatest skill can it be profitably conducted.

Mr. Lambert, as already stated, erected the first reverberatory furnace in Chili about the year 1837, and by him were built the first extensive smelting works in the port of Coquimbo. But smelting received its greatest impulse from the operation of the Mexican and South American Smelting Company, whose large establishment at Herradura, near Coquimbo, was run from 1848 to 1857 with persistent loss. It, however, benefitted Chili by introducing Napier's method, which with certain modifications has continued to be that used in making bars.

There are throughout Chili about ninety furnaces making regulus, and about sixty calciners and furnaces making bars and ingots.

The two largest establishments are at Lota and Guayacan. The former is owned by a company, which likewise owns and works some coal beds in the neighbourhood. The steamers carrying coal north to the smelting works at the mines return laden with ore; hence the Lota Company, with coal of their own at hand, and being their own carriers of ore, can afford to smelt even poorer mineral than can the furnaces at the mines. The Guayacan works on the Bay of Herradura are owned by Messrs. Urmeneta and Errasuriz, and are among the largest in the world, running ordinarily seventeen triple hearth calcining furnaces, thirteen smelting reverberatories, and two refining furnaces. When in full blast the works can turn out monthly from 15 per cent. ore, as regulus, bars, and ingots, equal to 1,000 tons fine. The same proprietors have furnaces at Cerillos, at the foot of the Tomaya hill, where the poorer Tomaya ores are run into regulus; and other works at Tongoi, the port of Tomaya, where the rest of the Piké and some other Tomaya ores are run into regulus, and where also some bar copper is made. But most of the regulus of Cerillos and Tongoi is sent for final treatment to Guayacan.

On the other side of the neck of land which divides the Bays of Herradura and Coquimbo lies the town of Coquimbo, with the abandoned smelting works of Charles Lambert and of Don Ramon Ovalle and Co., and the active works of Edwards and Co., where such care is taken in the selection and smelting that their bars and igots bring a better price in the English market than those of either Lota or Guayacan. They run into bars all the calcined regulus produced at the Compañia establishment of Mr. Lambert, situated on the Elqui river, just beyond the town of Serena, and on the opposite side of the bay to Coquimbo. In the days of old activity there were here seven reverberatories running, each with its three-storied calciner attached; now only two are running. At the Compañia are the only sulphuric acid works on the west coast. The acid is consumed in the manufacture of blue vitriol from the carbonate ores of the Panteon mine. The sulphate of copper finds a ready and profitable sale to the amalgamating works of the Copiapó.

But there are many other furnaces scattered throughout central and northern Chili, either at the mines themselves or at the nearest ports. The following are proximately the number of furnaces running regulus in the several districts:

Lota	8
Catemo	6
Cerillos and Tongoi	6
Guayacan	13
Edwards	4
Brillador	2
Panulcillo	6
Higuera	4
Copiapó	5
Peña Blanca	5
Carrizal	19
Chañaral	5
Pan de Azucar	3
Tocopillo	4
	90

This number tallies with that obtained by estimating the number of furnaces from the work done.

There were produced from January to July, 1871, in bars and regulus 410,679 quintals of fine copper, which would represent about 876,111 quintals of 50 per cent. regulus. As a furnace smelts about 300 quintals of 10 per cent. ore into, say, 55 quintals of 50 per cent. regulus daily, it would require eighty-seven furnaces running constantly to furnish the quantity above stated.

The proportion of coal consumed to ore smelted in making regulus is, at Panulcillo, in the reverberatories, as 1 to 3 5; at Guayacan as 1 to 2.8; at the Compañia as 1 to 2 6; and at Carrizal as 1 to 2.6. The coal principally used is the Chili coal of Lota and Coronel, whose smelting value is about one-seventh less than that of English smelting coal.

At Caldera, the port of Copiapó, there is a smelting establishment in operation, and two up the river, one at Punta del Cobre and another at Nantoko. At both of these oxidised ores of 18 per cent. are run into 62 per cent. regulus; and argentiferous and auriferous regulus are made by smelting copper ores with the poorer class of silver and gold ores, and even gold tailings.

At Guayacan the operations are as follows: A mixture is made of 15 per cent. ore. Sufficient carbonates can generally be had to avoid the necessity of calcining any of the sulphuret. This mixture is run into a 50 per cent. regulus. In making bars the regulus is calcined dead, in accordance with Napier's recommendation; but at Guayacan it is, before entering the calciners, crushed between Cornish rolls to 1-8th of an inch, instead of being disintegrated in water, as is done at the Compañia.

The result of the fusion of the calcined regulus is a bath of 96 per cent. metal, which is run into bars, and a rich matt of 70 per cent. This 70 per cent. matt is then smelted into blister copper of 15 to 20 tons. Willow rods are used in poling, and in addition to anthracite, dried aloe stems are thrown upon the bath of metal.

Mr. FRANCIS, the smelter, to whose intelligent superintendence Guayacan owes much of its prosperity, says he can make a ton of refined ingots out of 13 per cent. ore with 5 tons of coal.

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*Republished, with the revision and corrections by the author, from the London *Quarterly Journal of Science*.

THE ENGINEERING AND MINING JOURNAL.

ROSSITER W. RAYMOND, Ph. D., Editor.

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Notice to Mining Engineers.

THE present number of the ENGINEERING AND MINING JOURNAL is the last that will be sent to such members and associates of the American Institute of Mining Engineers as have not paid their dues for the year ending May 1873. Those who pay hereafter will receive the numbers from July, including the proceedings of the New York meeting, provided there are any back numbers on hand to send. But the supply of these is small, and we are under no obligation to furnish them, though we do it as a matter of courtesy, as long as it is practicable.

If any who have paid their dues fail to receive the Journal, they will confer a favor by promptly notifying this office of the fact, and also sending to MARTIN CORYELL Esq., Wilkesbarre, Penn., Secretary of the Institute, their full address.

The Blast Furnaces advertised in our columns for lease by the Union Mining Company offer a rare opportunity for the attention of capitalists in the present condition of the iron market—a condition which is very generally believed to promise long continuance. They are situated in the heart of the semi-bituminous coal region of Maryland, with unlimited supplies of limestone of the best quality, and within a few miles of the ore-beds of Pennsylvania, by the new connection with the Bedford and Bridgeport Railroad, access to the iron markets of Pittsburg, Philadelphia, and New York, by all rail connection. Facilities like these ought to command the attention of capitalists.

Quicksilver.

It is reported that a contract was concluded on the 17th inst., between the New Almaden Quicksilver Mining Company, of the first part, and Eugene Kelley and Co., of the second part, by which the latter purchase all the product of the mine during the year ending April, 1873, at $50 gold per flask. It is estimated that the produce will be about 24,000 flasks.

The Bullion Product for 1871.

The following is the estimate of the Commissioner of Mining Statistics of the Bullion product for 1871 as compared with the two preceding years:

	1869.	1870.	1871.
Arizona	$ 1,000,000	$ 800,000	$ 800,000
California	22,500,000	25,000,000	20,000,000
Colorado	4,000,000	3,675,000	4,663,000
Idaho	7,000,000	6,000,000	5,000,000
Montana	9,000,000	9,100,000	8,050,000
Nevada	14,000,000	16,000,000	22,500,000
New Mexico	500,000	500,000	500,000
Oregon and Washington	3,000,000	3,000,000	2,500,000
Wyoming		100,000	100,000
Utah		1,300,000	2,300,000
Other sources	500,000	525,000	250,000
Total	$61,500,000	$66,000,000	$66,663,000

The only other estimate we have seen makes the product $58,284,029, including British Columbia, but excluding Wyoming, New Mexico and the East. That estimate is based on the express returns, with an allowance for undervaluation and private shipments of 100 per cent. in Arizona and 20 per cent. in California, Idaho and Montana. The amount thus obtained for Arizona is less than half the actual product; that for California is probably correct, and has been adopted in round numbers in the above estimate. Idaho and Montana, as everybody knows who has travelled there, are not under the same conditions as California, in the shipment of bullion, and consequently there is much more undervaluation and sending of precious metals through the U. S. mails and by private hands in these Territories than in that State, where the communications are easier and the express and insurance rates lower. The estimate to which we have referred allows $1,000,000 for shipments of ores and base bullion from Utah, whereas the value of ores shipped from that territory during the year was about $1,620,900, and the value of the base bullion $316,150 (the weights carried by rail being 10,806 tons of the former, and 2,378 tons of the latter) to say nothing of about $500,000, the value of the lead. Again, Colorado is set down in the estimate referred to, at $3,046,917; whereas the careful statement already published in our columns shows the product of that Territory to have been $4,663,000.

Every item in the Commissioner's estimate (except that of Idaho) rests on satisfactory evidence, of which the express shipments form a part, but not the whole. The smart statisticians of San Francisco are invited to try their hands at the method they followed so brilliantly last year, of adding coinage to exports, by way of determining the product. The total gold and silver coinage of 1871, was $24,070,323, and the total exports of bullion, $26,233,912, the sum being $50,304,235, or eight millions less than the estimate which we can positively prove to be from six to eight millions too low. It is true, that they employ in their calculations, not the coinage, but the domestic deposits for coinage; but this being a still smaller amount, only makes the matter worse.

The Commissioner's report, now in the hands of the Congressional printer, discusses the subject more at length. We reproduce his results merely, as of general interest. In connection with the subject, we take this occasion to say, that the report of the Commissioner of Mining Statistics for 1871 has been (as usual) delayed by the pressure of other printing at Washington; that it will be put in type during the summer; but that no edition can be printed for general distribution before next winter, because Congress adjourned without authorizing such an edition. This annoying delay did not occur with Mr. RAYMOND's first two reports. His third report was treated in this way, and is consequently but just now before the general public—more than a year after its delivery. Apparently this will be the fate of the next, and all similar reports, so long as the new chairman of the House Committee on printing holds his position and his present opinions about such useless things as mining statistics. It is to this gentleman that the public owes the diminution of the edition of the last report from 10,000 to 5,000—a piece of small economy which did not affect his rural constituents; who get their usual share of the 180,000 copies of the Agricultural reports. His name is Beatty, and he belongs in Ohio.

Arkansas Lignites, Phosphorus in Iron, etc.

WE give beneath a more correct and detailed report of the remarks of Mr. J. BLODGETT BRITTON on these subjects, at the recent meeting of the Institute of Mining Engineers.

Mr. BRITTON had some knowledge of the lignite of Arkansas—traced it over some square miles above and below Camden and along the Ouachita river, and had seen the same in limited quantity in Mississippi and Louisiana, and had heard of it in Texas. The seams in Arkansas were some of them six feet thick, lying nearly horizontal, and in places cropping out from the hills. When first mined it was dark, nearly black, but after exposure to a drying atmosphere soon got lighter and became friable, and when in such condition could be easily ignited. A pile of it of more than 1,000 tons had been accidentally set fire to by the emptyings of a pipe of one of the miners, and quickly burnt, leaving behind only a light, somewhat bulky ash which, tested between the teeth, was found to be nearly wholly free from sand or grit. When burnt in a stove with a strong draft the flame would heat the pipe ten feet high. He had roughly analyzed it, and found some 20 per cent. of water and as much as 14 per cent. of crude oleaginous matter, which congealed at about 80° Far.—thought it would not answer to transport for fuel, though he believed it could be utilized in the SIEMENS regenerative furnace; it would not coke.

He judged from his analysis that it was identical with some of the lignites of the far West; both contained, variously disseminated, a yellowish resinous substance, sometimes called mineral amber, some pieces of which, larger than peas, he had distilled, and obtained as the product an oil similar to what he found in the lignite.

In the blue ore of Cornwall, Mr. BRITTON had found from three to four per cent. of sulphur, but this could be eliminated by the roasting furnaces in use. The pig iron produced, he understood, was used successfully for making Bessemer steel at the Pennsylvania Steel Works and Cambria Iron Works. The chemists at those works, he was informed, had found the pig practically free from sulphur, but not always from copper.

In the course of some extended remarks he further said in substance that within the last three years he had made a great many analyses of iron rails, a very fine collection of samples of which had been furnished by officers of the Pennsylvania Central, Philadelphia and Reading, Philadelphia and Baltimore roads. The samples were composed of some of the best wearing, some of the worst, and some of the medium quality. The object was to ascertain, if possible, the cause of the difference in the wearing qualities. The work had been laborious, and along he had been unable to complete it, the American rails were made up of so many different irons. The results were conflicting, and he could not, from those he had obtained, arrive at any important reliable conclusions—he had not been successful. He could say, however, that in rails made in South Wales, which had been in use for more than 30 years, and which had not split, cracked or crushed in wear, but had worn out by abrasion only, the average of some fifty analyses

showed about .32 of phosphorus, .06 of sulphur, something more that .30 of silica, and some .06 of carbon. These rails had been made by piling, and not each from a single bloom—there had been much work on them. So good and strong was the iron, that when taken from the track, the old rails were worked up into car axles, bridge rods, etc. In the heads of some very good wearing American rails he had found an excess of phosphorus, but in the necks and flanges the foreign matter he found variable—sulphur was present nearly always. He had found in ore received from Milwaukee as much as four per cent. of phosphorus to 100 of iron, yet understood the metal made from it was used successfully in the heads of rails.

Mr. BRITTON afterwards stated privately that he had carefully examined 17 samples of rail heads of Bessemer steel, containing .21 of phosphorus and .31 of carbon; the metal had proved practically worthless. And other steel (so called) in which he found over .14 of phosphorus and .19 of carbon he was told proved unexceptionable.

About-Town Jottings.

BUSINESS AND PERSONAL.

Personal announcements and business notices inserted in this column, at fifty cents per line.

Root's Wrought Iron Sectional Boiler, manufactured by the Root Steam Engine Co., 500 to 510 Second Avenue, New York.

Utica Steam Engine Co. (formerly Wood & Mann Steam Engine Co.,) 42 Cortlandt street, N. Y.

Post & Goddard have removed to No. 111 Liberty street. Dealers in Taps, Dies, Reamers, Drills and supplies generally.

American Submerged Pump. Power attachment—cheapest and best in the market, 55 Chambers street, N. Y.

Roper Caloric or Hot Air Engine, 124 Chambers St.

Blake Bros., New Haven, Conn., manufacture Stone Breaker for crushing ores and minerals of every kind into small fragments, preparatory to their further comminution by other machinery.

The Niagara Steam Pump Works, 23 Adams street, Brooklyn, N. Y., are now working to their fullest capacity.

MINING SUMMARY.

Nevada.

(From our own Correspondent)

EUREKA, NEVADA, June 11th, 1872.

TO THE EDITOR.

When it became evident some five or six years ago, that every mountain range in central and eastern Nevada contained deposits of silver ore, speculators were not slow to take advantage of the discovery. Provided with abstracts of title to a dozen worthless, or at least wholly unprospected claims, they appeared in New York as self-denying benefactors,—willing to give capitalists an opportunity of realizing millions by an outlay of a few thousand dollars. The utter failure of every undertaking started on such a false basis, had the natural effect in Wall street of making "Nevada silver mines" and "deliberate swindling" as nearly as possible convertible terms. There is something extenuating to be said, however, in regard to the misrepresentations of the more unsophisticated of these early operators. In common with many of the pioneers of the country, they were the victims of certain fallacies relative to mines, which time and labor have long ago exposed. They really believed that every outcrop of silver-bearing rock must lead to a productive mine, that the ore would get richer with increased depth; and that in no case could a lode be exhausted. This comprehensive belief was readily adopted and skillfully amplified by those sharpers of the period who could see horn-silver in granite—bullion in milky quartz; and coin in every credulous business man on whom lingual accomplishments could be brought to bear. Their object was to make money, regardless of consequences, and for the success which they attained in that line, the mines of Nevada have had to pay the penalty of almost complete ostracism from the moneyed circles of the Atlantic coast.

While it has long been an acknowledged fact that silver mining as a business requires large means, sound judgment, watchful economy, and unflagging perseverance, it has also been practically demonstrated that with these pre-requisits brought to bear on it, it can be made safe and largely remunerative. Its importance as one of the standard industrial pursuits of the United States has not yet been widely appreciated, but with increased railroad facilities, and consequent reduction in the cost of supplies, it will gradually attain immense national importance. With these remarks introductory to the occasional letters which I am likely to send you from this state, I will now allude to one or two features in the mines of Eureka district.

SMELTING ORES.

The extensive deposits of argentiferous lead ores which have given this district its high reputation, occur in a mineral belt having a general course through Ruby Hill, a little south of east and north of west,—almost parallel with and only a short distance east of the line of contact between the quartzite and the limestone. The celebrated Richmond lode purchased last year by an English company, and the very valuable mines of the Eureka Consolidated Company cover the very best portion of the ground. Both of these properties have extensive bodies of ore in sight, varying in width in some places from 50 to 100 feet. It cannot be said that a continuous well-defined vein has been found, but the deposits, though occasionally isolated, are often connected on an easterly and westerly line by small "stringers" of iron rock. The ore is easily mined, the cost of merely breaking it down being probably less than a dollar per ton, though the miners are paid $4 per day in gold. The heaviest expense is in timbering up the immense chambers, and where power-facilities for hoisting are not available, it takes several men to bring to the surface what one man can mine.

As white pine-logs, not less than eight inches in diameter cost 50 cents per lineal foot, it may yet be thought advisable to adopt the plan so extensively followed in Australia, of filling up large vacant spaces by four feet stacks of firewood to be afterwards surrounded by waste rock. The cost of hauling the ore by ten and twelve mule teams to the furnaces, 2½ miles distant, is $2¼, and the actual expense of smelting $15 to $20 per ton, the charcoal used costing 30 cents per bushel.

To the north of Ruby Hill several promising mines of good furnace ore are being opened including the Silver West and Bullwhacker. Though these are off at one side, they probably belong to the same great belt, which also continuing south easterly for several miles, gives us a set of mines in New York canyon yielding ores nearly similar in character.

MILLING ORES.

There are three distinct localities in the district from which these are obtained. Half a mile north of Ruby Hill the General Lee and Empire mines represent a cluster of claims on what is known as Adams Hill. The ore contains too little lead for smelting but at times, pockets of it are found, quite rich in silver. One great drawback to the value of the mines is the cost of mining, consequent on the hardness of the rock, but this disadvantage may be overcome as depth is gained.

At the end of New York canyon and about a mile east of our main ore belt, several claims have been located recently, the croppings of which assay from $200 to $300 per ton. What they will amount to as productive lodes has yet to be determined.

About three miles north of Eureka, Prospect mountain rears its rugged head some 2,000 feet skyward. For nearly three miles north and south, and on the western as well as the eastern slope, numerous veins and deposits of ore containing three to four per cent. lead, and $50 to $100 per ton in silver have been claimed. Of these the Orange, Lord Byron, Valentine, Laral or Hidden Jewell, Excelsior, Elise and Chattanooga, have had considerable work done on them. Though the "ore channels" are not so large as in our best carbonate of lead mines, enough has been proven to warrant the belief that the mountain is rich in silver. There may not be more than one or two great main lodes, but the yield of ore from spurs, offshoots and isolated deposits will be very large, whenever systematic underground mining is had recourse to. At the south end of the ridge the strike of the lodes is about north east, and south west, the dip being to the north west, but further north the veins run nearly due north and south, while some of them pitch east and others west, and not always into the hill. Since the Lemon mill is now in successful operation, mine-owners are able to realise a profit on ores which formerly were utterly valueless.

THE NEW MINING ACT

of Congress has set many of our sober citizens tunnel-crazy. For several days after the printed law came to hand, men were running excitedly all over the district trying to edge in a promising location. The first claim on Ruby Hill took in nearly its whole extent but a day or so after two more were put on the top of it. On Prospect mountain one of the numerous claimants is said to have marked out his entire claim of 3,000 by 1,500 feet with a line of stone monuments. Every ore deposit which is found now within these lines, will be claimed under the tunnel-right, if it cannot be shown that its apex comes within previously established lines. It is in cases such as this, that the tunnel section of the new act is likely to impede for a time the development of our mines rather than to promote it. If *continuous work* had been made imperative the case would have been different, but as it is, any man who can run a few feet of tunnel every six months may dog-in-the-manger fashion hold a right to a whole mountain and so depreciate the value of every lode-claim which cannot be lined out on the surface except as explorations determine what its course really is. The law as a whole is excellent, many objectional features having been changed in its passage through congress, but its tunnel-clause is only for the benefit of monopolists. I do not say this from being "sore headed," I secured a right under it which gives me a monopoly that others would only have been too glad to obtain if they had known in time that the law was in force.

JOHN DARE EMERSLEY.

Gold Mining in Oregon.

(From our own Correspondent)

TO THE EDITOR.

SIR:—In continuation of the remarks from this part of the country sent to you some time ago, I beg leave to add the following: The Eldorado Ditch, over ninety-three miles long, is completed. Water ran through it and into Eldorado last week, the mines proving to be No. 1. My Eagle Creek Ditch is also finished, and doing a fine business. The mines here are also good and extensive. I am now, in company with some others, going to work on quartz. We will commence on Summit lode, in Summit mining district, Eagle Creeek. We are at present filling up a five stamp mill, and continue running a tunnel to strike the vein about ninety feet from the surface. By shaft we have been down about seventy feet on the Summit lode. We worked the rock to be taken out, or rather it was worked last fall and winter in an indifferent manner by parties, who opened the mine. This rock taken out from the surface to a depth of 70 feet, gave returns from $30 to $60 and $80 per ton. This was only the free gold, worth $15 per ounce.

The vein is from twelve to forty inches, well defined, and going down at a dip or angle of from 70 to 80 degrees. So far all the rock has been good, but now some of it requires roasting, before amalgamation.

W. H. PACKWOOD.

BAKER CITY, Oregon, June 3rd, 1872.

Advertisements.

The special advantages of the ENGINEERING AND MINING JOURNAL, *as a medium for advertisers, are so great and so widely known that it may seem almost needless to call attention to them. It is extensively circulated among the engineers of the country and takes a position in this respect before any other publication of the kind. It has a large and constantly increasing circulation among miners and mine owners, and men connected with mining operations generally. As it is the only paper in the country that makes this subject a specialty it has this field entirely to itself, and is the only direct and reliable means of reaching this class of persons. Being kept on file by almost every subscriber, it is doubly valuable as a permanent means of keeping an advertisement before the public. It is the Organ of the* AMERICAN INSTITUTE OF MINING ENGINEERS, *and is regularly received and read* BY ALL THE MEMBERS AND ASSOCIATES *of that large and powerful society* THE ONLY ONE OF THE KIND IN THIS COUNTRY. *It is therefore the best medium for advertising all kinds of machinery, tools and materials used by engineers or their employers. It is the recognized organ of the coal trade, and is taken extensively by the trade throughout the country, and presents the very best means of reaching that very important class of men.*

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The Royal Prussian Smelting Works of Clausthal, the Harz generally, the Association of Eisleben, and the Royal Saxon Smelting Works of Freiberg, have appointed as their Agent R. J. ROBERTSON, METAL-DEALER IN HAMBURG, GERMANY, who is now ready to buy for the above works all kinds of

Gold and Silver Ores, Regulus and Base Bullion.

Payment made according to a regular tariff, agreed upon by all the works referred to. No commission charged to sellers.

For particulars address

H. ROBERTSON,
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TO OWNERS OF MINES.

The "St. Louis Smelting and Refining Co.,"

will commence operations on the 1st of July, when they will be prepared to smelt ores of Silver and Gold, or refine Base Bullion, on commission or to purchase the same. Correspondence is solicited from all parties having these materials for sale or reduction, stating the character of the ore and the amount which may be depended on for regular supply, whenever such parties propose to furnish material regularly.

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The UNION MINING COMPANY, Proprietors of the old MOUNT SAVAGE IRON CO., offer for lease their Blast Furnaces (two) of 13 and 16 feet bosh respectively, capable of producing 300 tons per week. The situation of these Furnaces in the heart of a country offering coal and limestone of the best quality at the lowest cost, and within short and cheap reach by railway connection of the ore-beds of Pennsylvania, presents to capitalists a favorable opportunity for investment. Within a few weeks a thorough connection by rail between the Furnaces and Philadelphia and New York will be completed. For terms apply to

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New Patterns, of any desirable weight, made to order on Short Notice.

We respectfully solicit orders for New Rails, or Re-rolling. June 25.1y

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Desirous of enlisting the attention of manufacturers to the advantage of locating manufacturing establishments upon the line of their Railway, will give to any Rolling Mill or Blast Furnace Company so locating forty (40) acres of ground for works, and the coal in one hundred (100) acres of Clay or Owen County, Indiana, block coal field; the ore from one hundred (100) acres of the Hardin, Pope or Massac County, Illinois, brown hematite beds, and agree to furnish them with all orders for merchant iron required for the Railway's use for a period of two years.

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To any Car Wheel Foundry or Axle Forge, the necessary grounds for works, and liberal orders for their products in kind.

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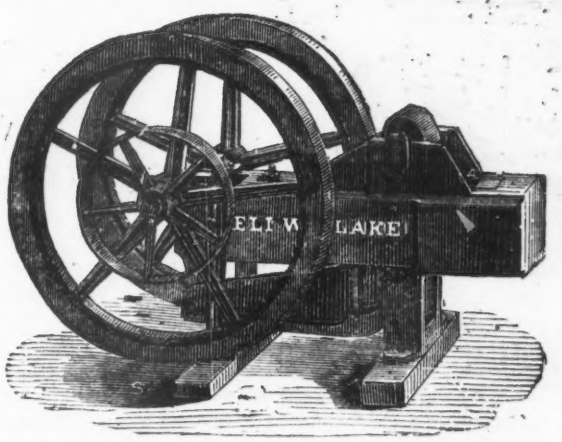

The office of this Machine is to break Ores and Minerals of every kind into small fragments, preparatory to their further comminution by other machinery.

This machine has now been in use, enduring the severest tests, for the last ten years, during which time it has been introduced into almost every country on the globe, and is everywhere received with great and increasing favor as a labor-saving machine of the first order.

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☞ The Patents obtained for this machine in the United States and in England having been fully sustained by the courts, after well contested suits in both countries, all persons are hereby cautioned not to violate them; and they are informed that every machine now in use or offered for sale, not made by us, in which the ores are crushed between upright convergent faces or jaws actuated by a revolving shaft and fly-wheel, are made and used in violation of our patent.

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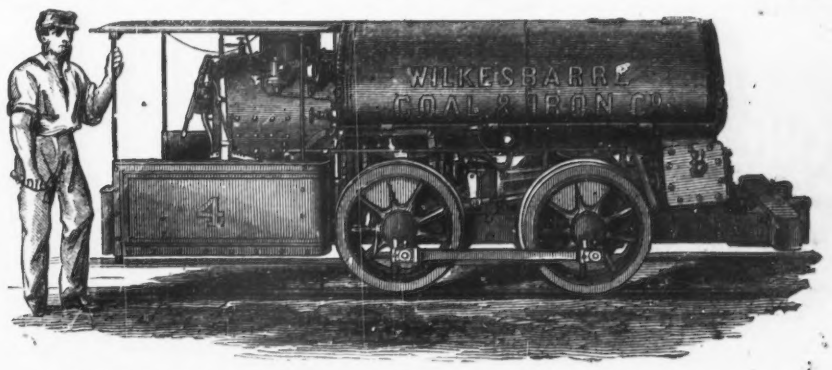

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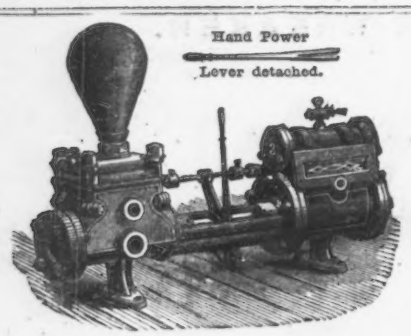

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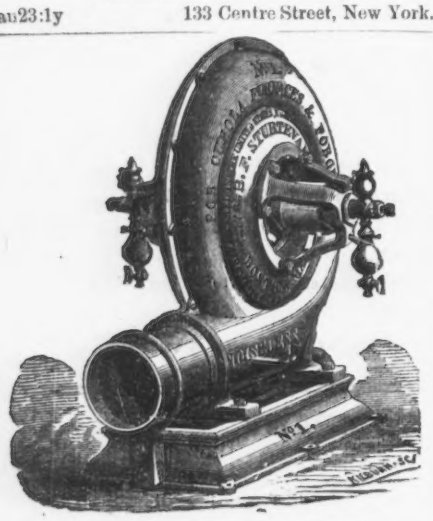

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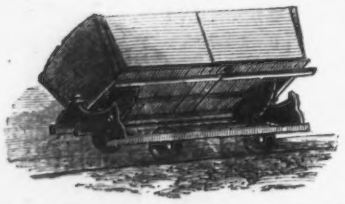

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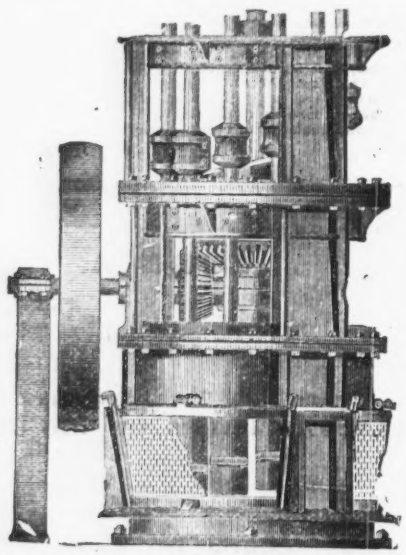

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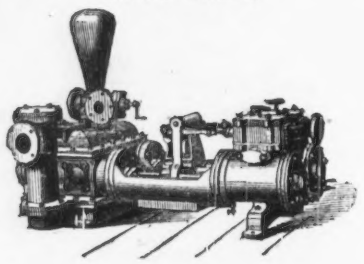

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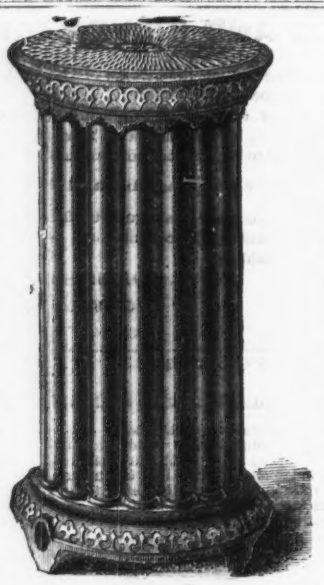

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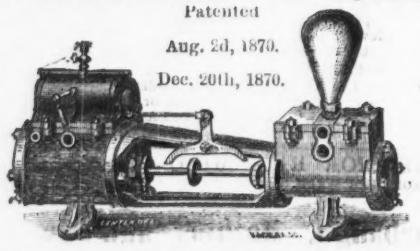

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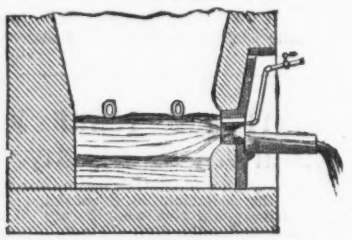

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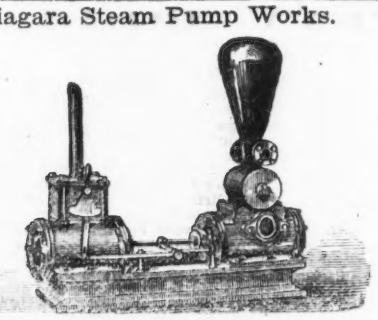

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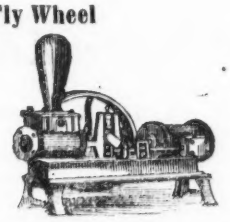

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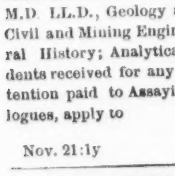

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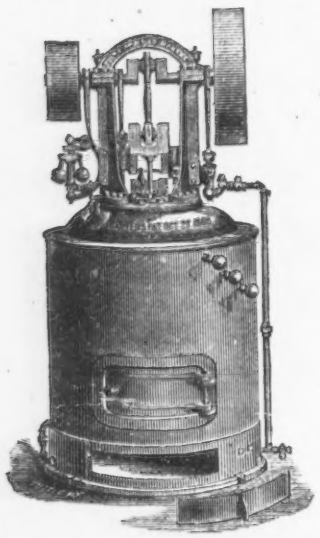

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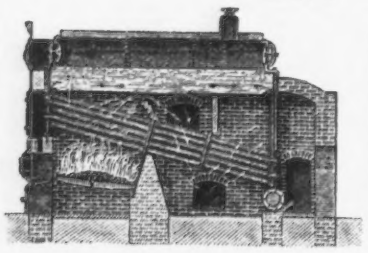

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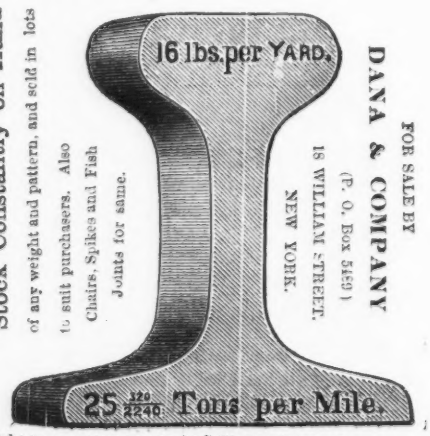

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